

### **REMARKS/ARGUMENTS**

Claims 1-15 and 17-25 remain in this application. Claims 10, 23 and 26 have been amended. Claim 16 has been cancelled by a previous amendment. Claims 1-9 and 18-22 have been withdrawn as a result of an earlier restriction requirement. In view of the examiner's earlier restriction requirement, applicant retains the right to present claims 1-9 and 18-22 in a divisional application.

#### **§ 102 Rejections**

**Claims 10-12, 15 and 23-26 rejected under 35 USC 102(e) as being anticipated by or, in the alternative, under 35 USC 103(a) as obvious over US Patent Publication 2003/0180602 (Finn).**

Claims 10 and 23 now specify that the electrolyte sheet is made of partially stabilized zirconia. This amendment is supported, for example, by paragraph [0049] of Applicant's specification. The Finn reference teaches a YSZ electrolyte-i.e., a fully stabilised zirconia electrolyte. (See, for example, paragraph [00202] of this reference.)

Accordingly, claims 10-12, 15 and 23-26 are neither anticipated by or, nor are obvious under 35 USC 103(a) over US Patent Publication 2003/0180602 (Finn).

Furthermore, regarding claims 10 and 23, since the claimed electrolyte sheet is not made of the same material, it is not inherent that the Finn electrolyte sheet has the same flexibility or equivalent ohmic resistance.

Finally, Claims 10 and 23 now specify that "the average thickness of the electrolyte sheet situated under said at least one cathode and said at least anode is smaller than the average thickness of the electrolyte sheet not situated under said at least one cathode and said at least anode." This is shown/described, for example, in Fig 11A and 11B and paragraph [0067] of Applicants' specification. This feature is also not disclosed by

the Finn reference. Claims 11-12 and 15 depend from claim 10 and thus expressly incorporate the language of claim 10. Claims 24-26 depend from claim 23 10 and thus expressly incorporate the language of claim 23. Accordingly, claims 10-12, 15 and 23-26 are not anticipated by the Finn reference.

Claim 26 depends from claim 10 as its base claim and thus is not obvious over the Finn reference for the same reasons that claim 10 thus is not obvious over the Finn reference. In addition, claim 26 further specifies that “thinner areas of said electrolyte sheet are micro-textured.<sup>1</sup>” This statement is supported, for example, by Figs 4A and 4B and 15 of Applicants’ specification (see enclosed, Appendix A), which show additional texture in the “grooved” or “thinner” areas. On pg. 4 of the Office Action the Examiner stated “Regarding claim 26, the electrolyte layer is made from the same material and the features are made by various chemical and mechanical methods. The thinner areas will have textured and therefore are textured.” However, the reference itself does not disclose micro-texturing of the thinner areas, and the reference’s figures do not show such micro-textured areas. That is, the reference itself does not support Examiner’s assertion that the thinner areas of the referenced electrolyte are textured.

### **§ 103 Rejections**

**Claims 10-15 and 23-26 are rejected under 35 USC 103(a) as being unpatentable over US Patent Publication 2001/0044043 (Badding) in view of US Patent Publication 2003/0180602 (Finn).**

As described above, claims 10 and 23 specify that the electrolyte sheet is made of partially stabilized zirconia. The Fin reference discloses a fully stabilised zirconia electrolyte.

Paragraphs [0003] and/or [0004] of the Badding also discloses a stabilised zirconia electrolyte, and do not disclose a partially stabilised zirconia electrolyte.

Furthermore, as described above, neither of the two cited references, either singly, or in combination, describe the feature of “the average thickness of the electrolyte sheet situated under said at least one cathode and said at least anode is smaller than the average thickness of the electrolyte sheet not situated under said at least one cathode and said at least anode.” Thus, because the cited references, in combination, do not disclose all of the claimed features of the claims, Claims 10-15 and 23-26 are not unpatentable over US Patent Publication 2001/0044043 (Badding) in view of US Patent Publication 2003/0180602 (Finn).

**Claims 13 and 14 are rejected under 35 USC 103(a) as being unpatentable over US Patent Publication 2003/0180602 (Finn).**

Claims 13 and 14 depend from claim 10 as their base claim and, therefore, expressly incorporate the language of claim 10. Accordingly, Claims 13 and 14 are not obvious over the Finn reference for the same reasons that claim 10 is not obvious over this reference.

Furthermore, paragraph [0195] of Finn teaches that the thickness of the electrolyte sheet ranges between about 20  $\mu\text{m}$  and 10,000  $\mu\text{m}$ , preferably between 50 and 1000  $\mu\text{m}$ . That is the minimum thickness described in paragraph [0195] of the Finn reference is 20  $\mu\text{m}$ . The Examiner stated that “Claims that differ from the prior art only by slightly different (non-overlapping) ranges are *prima facie* obvious without showing that the claimed range achieves unexpected results relative to prior art”. Applicants respectfully disagree that the ranges claimed in claims 13 ad 14 are only slightly different from the range disclosed by the Finn reference.

Applicants Claims 13 and 15 call for a maximum thickness of 15  $\mu\text{m}$ , which is a lot (25% ) smaller than the minimum thickness described in paragraph [0195] of the Finn reference, and more than 3 times smaller than the preferred minimum thickness of 50  $\mu\text{m}$ . This is not an “only slightly different” range.

It is not obvious that making the electrolytes sheets within the claimed thickness range and with the specific claimed thickness variations will not jeopardize electrolyte's integrity and strength. It is Applicants who realized that by making the electrolytes sheets within the claimed thickness range and with the specific claimed thickness variations, the electrolyte sheet will maintain its structural integrity, while the ohmic resistance will be improved beyond 0.5 ohms/cm<sup>2</sup>. As mentioned in the previous respons, flexibility and strength of the electrolyte sheet is not an inherent characteristic of the electrolyte sheet, because these properties of the electrolyte sheet depend on: (i) overall or regional flatness of the electrolyte sheet, (ii) electrolyte sheet microstructure, and (iii) size and frequency of inclusions or defects. Furthermore, as described above, the Finn reference discloses an electrolyte sheet made of a different material than the one claimed by the Applicants.

Finally, as discussed in the previous response, the Examiner pointed out that Finn discloses electrolyte surface texturing. The Examiner than stated that "The motivation to use texturing parameters of Finn is to improve adhesion and reduce the electrolyte/electrode resistance". However, since the Badding device already achieves these functions by having the interface layers (2), and does not disclose that he has a problem with adhesion or electrolyte/electrode resistance, there is no need to further modify Badding, and the motivation to combine the references does not exist. The Examiner provided no evidence of why one of skill in the art would need to further increase adhesion strength of Badding, or that the adding Finn fixtures in the presence of Badding's interface layers would even be capable of either further increasing the adhesion strength. If the Badding device already achieves its function by other means and if the Badding reference does not disclose a problem that still needs to be solved, one of skill in the art has no motivation to modify the Badding reference by combining it with other art.

### **Conclusion**

Based upon the above amendments, remarks, and papers of records, applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Application No.: 10/611,507  
Response Dated: June 10, 2008  
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Applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Svetlana Z. Short at 607-974-0412.

Respectfully Submitted,

DATE: 6/10/08

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Appendix A

FIG. 4A

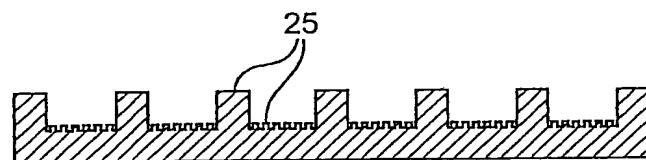


FIG. 4B

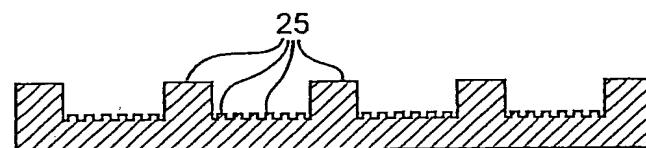


FIG. 15

